CLAIMS:
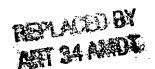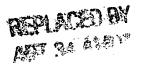
1. A method for use in encoding video data, including generating metric values for said video data based on a metric function and respective encoding parameters, and selecting at least one of said encoding parameters on the basis of a desired quantity of
5   encoded video data and a predetermined relationship between metric values and respective quantities of encoded video data.

2. A method as claimed in claim 1, including determining an estimate for the quantity of encoded video data from said relationship and the selected at least one encoding parameter, encoding said video data using the selected at least one encoding parameter,
10   determining an error between said estimate and the quantity of encoded video data, and adjusting said relationship on the basis of said error.

3. A method as claimed in claim 2, wherein said error is determined for at least one of frames, segments, and macroblocks of video data.

4. A method as claimed in claim 2, wherein said error is determined for frames and
15   macroblocks of video data.

5. A method as claimed in claim 1, including determining said relationship from a plurality of quantity values and metric values of video data, said metric values determined from said metric function, each of said bit values and said metric values being determined for a respective coding parameter.

20   6. A method as claimed in any one of the preceding claims, wherein said relationship is a power law relationship.

7. A method as claimed in any one of the preceding claims, wherein said metric function is based on AC coefficients of discrete cosine transformation data generated from said video data.

8. A method as claimed in any one of claims 1 to 7, wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients.

9. A method as claimed in claim 8, wherein said metric function is of the form,

$$\sum_{u,v} \frac{|f(u,v)|}{w(u,v)\, q(u,v)},$$ where $f(u,v)$ is a discrete cosine transformation coefficient of a

block element with coordinates (u, v), $w(u,v)$ is a weight for said coefficient, and $q(u,v)$ is a quantization parameter for said coefficient.

10. A method as claimed in claim 8, wherein said metric function is of the form,

$$\sum_{u,v} \frac{|f(u,v) * h(u,v)|}{w(u,v)\, q(u,v)} =,$$ where $f(u,v)$ is a discrete cosine transformation coefficient

of a block element with coordinates (u, v), $w(u,v)$ is a weight for said coefficient, $q(u,v)$ is a quantization parameter for said coefficient, and $h(u,v)$ is a spatial weighting factor for said coefficient.

11. A method as claimed in any one of claims 8 to 10, wherein metric values are determined for each 8x8 pixel block of said video data using said metric function.

12. A method as claimed in claim 11, including determining a metric value for a macroblock by summing metric values for the constituent 8x8 pixel blocks.

13. A method as claimed in any of the preceding claims, including determining basic metric values from said metric function and basic encoding parameters, and deriving metric values from said basic metric values.

14. A method as claimed in claim 13, including deriving said metric values from said basic metric values using shift and add operations.

15. A method as claimed in any one of claims 1 to 7, wherein said metric function is based on the number of non-zero AC discrete cosine transformation coefficients after quantization.

16. A method as claimed in claim 15, wherein said metric function is used to determine metric values for a macroblock of six 8x8 pixel blocks.

17. A video encoding module having components for executing the steps of any one of the preceding claims.

5   18. A video encoding module, including a predictor module for determining estimates for the quantity of encoded video data using respective quantization parameters, and a selector module for selecting at least one of said quantization parameters on the basis of said estimates.

19. A video encoding module, including a predictor module for determining estimates for
10   bit counts representing the quantity of video data encoded using respective quantization vectors, a selector module for selecting two of said quantization vectors on the basis of said estimates, first quantization and variable length coding modules for generating first encoded video data using a first of said selected quantization vectors, second quantization and variable length coding modules for generating second encoded video
15   data using a second of said selected quantization vectors, and an output decision module for selecting one of said first encoded video data and said second encoded video data for output on the basis of at least one of the bit count value of said first encoded video data and the bit count value of said second encoded video data.

20. A video encoding module as claimed in claim 19, wherein said output decision module
20   adjusts encoding parameters for encoding video data on the basis of at least one error between an estimated bit count and a corresponding bit count.

21. A digital video (DV) encoder, including a video encoding module as claimed in any one of claims 17 to 20.

22. An MPEG encoder, including a video encoding module as claimed in any one of
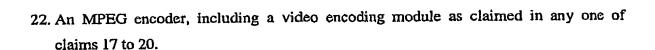25   claims 17 to 20.

1. A method for use in encoding video data, including using a metric function to generate metric values from said video data and respective encoding parameters, and selecting at least one of said encoding parameters on the basis of a desired quantity of encoded video data and a predetermined relationship between metric values and respective quantities of encoded video data.

2. A method as claimed in claim 1, including determining an estimate for the quantity of encoded video data from said relationship and the selected at least one encoding parameter, encoding said video data using the selected at least one encoding parameter, determining an error between said estimate and the quantity of encoded video data, and adjusting said relationship on the basis of said error.

3. A method as claimed in claim 2, wherein said error is determined for at least one of frames, segments, and macroblocks of video data.

4. A method as claimed in claim 2, wherein said error is determined for frames and macroblocks of video data.

5. A method for use in encoding input video data, including determining a relationship between metric values generated from reference video data using a metric function and respective first encoding parameters, and quantities of encoded video data generated by encoding said reference video data using said respective first encoding parameters; using said metric function to generate metric values from said input video data and respective second encoding parameters; and selecting at least one of said second encoding parameters on the basis of a desired quantity of encoded video data and said relationship.

6. A method as claimed in any one of the preceding claims, wherein said relationship is a power law relationship.

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7. A method as claimed in any one of the preceding claims, wherein said metric function is based on AC coefficients of discrete cosine transformation data generated from said video data.

8. A method as claimed in any one of claims 1 to 7, wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients.

9. A method as claimed in claim 8, wherein said metric function is of the form,

$$\sum_{u,v} \frac{|f(u,v)|}{w(u,v)\, q(u,v)},$$

where $f(u,v)$ is a discrete cosine transformation coefficient of a block element with coordinates $(u,\ v)$, $w(u,v)$ is a weight for said coefficient, and $q(u,v)$ is a quantization parameter for said coefficient.

10. A method as claimed in claim 8, wherein said metric function is of the form,

$$\sum_{u,v} \frac{|f(u,v)*h(u,v)|}{w(u,v)\, q(u,v)} = ,$$

where $f(u,v)$ is a discrete cosine transformation coefficient of a block element with coordinates $(u,\ v)$, $w(u,v)$ is a weight for said coefficient, $q(u,v)$ is a quantization parameter for said coefficient, and $h(u,v)$ is a spatial weighting factor for said coefficient.

11. A method as claimed in any one of claims 8 to 10, wherein metric values are determined for each 8x8 pixel block of said video data using said metric function.

12. A method as claimed in claim 11, including determining a metric value for a macroblock by summing metric values for the constituent 8x8 pixel blocks.

13. A method as claimed in any of the preceding claims, including determining basic metric values from said metric function and basic encoding parameters, and deriving metric values from said basic metric values.

14. A method as claimed in claim 13, including deriving said metric values from said basic metric values using shift and add operations.

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15. A method as claimed in any one of claims 1 to 7, wherein said metric function is based on the number of non-zero AC discrete cosine transformation coefficients after quantization.

16. A method as claimed in claim 15, wherein said metric function is used to determine metric values for a macroblock of six 8x8 pixel blocks.

17. A video encoding module having components for executing the steps of any one of the preceding claims.

18. A video encoding module, including a predictor module for generating metric values from input video data using a metric function and respective quantization parameters, and a selector module for selecting at least one of said quantization parameters on the basis of said metric values and a predetermined relationship between metric values and respective quantities of encoded video data.

19. A video encoding module, including a predictor module for determining estimates for bit counts representing the quantity of video data encoded using respective quantization vectors, a selector module for selecting two of said quantization vectors on the basis of said estimates, first quantization and variable length coding modules for generating first encoded video data using a first of said selected quantization vectors, second quantization and variable length coding modules for generating second encoded video data using a second of said selected quantization vectors, and an output decision module for selecting one of said first encoded video data and said second encoded video data for output on the basis of at least one of the bit count value of said first encoded video data and the bit count value of said second encoded video data.

20. A video encoding module as claimed in claim 19, wherein said output decision module adjusts encoding parameters for encoding video data on the basis of at least one error between an estimated bit count and a corresponding bit count.

21. A digital video (DV) encoder, including a video encoding module as claimed in any one of claims 17 to 20.

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22. An MPEG encoder, including a video encoding module as claimed in any one of claims 17 to 20.

23. A method as claimed in claim 1, including generating predicted quantities of encoded video data from said predetermined relationship and said metric values generated from said video data, and selecting one or more of said predicted quantities of encoded video data closest to said desired quantity of encoded video data.

24. A method as claimed in claim 1, wherein said predetermined relationship is determined on the basis of metric values generated by said metric function from reference video data and respective encoding parameters, and respective quantities of encoded video data generated by encoding said reference video data using said respective encoding parameters.